

Notice of Allowability

Application No.

10/811,584

Examiner

Charles Chow

Applicant(s)

LIN ET AL.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/3/2006.
2. ☒ The allowed claim(s) is/are 1-8, 10-18 and 20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Detailed Action

1. This office action is for amendment received on 10/3/2006.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

Claims 1-8, 10-18, 20 are allowable over the prior art of record. The prior arts fail to teach the allowable features, singly, particularly, or in combination.

Applicant has amended independent claims 1, 11 with the allowable features from respectively objected features in claims 9, 19, & canceled claims 9, 19 [page 8 of applicant amendment, 10/3/2006], having the structure for providing the function to reduce the harmonic content of a mixer associated with the oscillator signal, by

weighting the oscillator output signals in accordance with a strength of legs forming the harmonic rejection mixer, the strength of the legs being determined by how much each leg contributes to the reduced harmonic output signal [claims 1, 11].

The dependent claims are also allowable due to their dependency upon the allowable independent claims above, and the having additional claimed features.

The closest prior art, **See (US 2004/0005,869 A1)**, teaches a harmonic rejection mixer 11 [in Fig. 5, paragraph 0039-0042] having I, Q inputs to mixer 85-90, to modulate the oscillator signals from 81 to 84 of the divider 23 [Fig. 4; paragraph 0040], but fails to teach the structure for providing of plurality of oscillator output signals having respective mutually distinct phases that are interpolated between the first and second phases, & the **weighting the oscillator output signals in accordance with a strength of legs forming the harmonic rejection mixer, the strength of the legs being determined by how much each leg contributes to the reduced harmonic output signal**.

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Pickering et al. (US 6,242,965 B1) teaches the phase regeneration 162₁ to 162_n [Fig. 16], each receives two oscillator signals, REF1 & REF2, having respective phase offset [col. 1, lines 58-62], to produce phase shifted oscillator outputs DRCLK1 to DRCLK_n, having predetermined phase offset [abstract & col. 2, lines 4-10], but fails to teach the above allowable features.

Other prior arts in below has been considered, but they fail to teach the above allowable features.

Chen (US 6,359,486 B1) teaches the oscillator circuit [Fig. 7] is configured to provide the oscillator output signals [OUT & OUTB] having phases Φ_0 , Φ_1 , Φ_{0B} , Φ_{1B} [in Fig. 7, Fig. 8], the phases of Φ_{0B} , Φ_{1B} are in opposite to the phases from Φ_0 , Φ_1 respectively.

Kuwano (US 6,359,523 B1) teaches the orthogonal modulator in Fig. 2, abstract, having the 90 degree phase shifter 5 for output 4 oscillator signal to I/Q mixer 3, for frequency up conversion.

Malone et al. (US 2005,0032,486 A1) teach the LO phase interleaver 326 and the polyphase circuit 321 for producing four local oscillator signals 322-325 [paragraph 0040].

Others were considered also. They are: **Yang (US 2005/0175,132 A1)**, **Lee et al. (US 6,512,408 B2)**, **Donnelly et al. (US 5,808,498)**, **Routh et al. (US 3,296,517)**, **Martin te al. (US 2003/0016,762 A1)**, **Persico (US 5,574,755)**, **Kimppa et al. (US 6,373,345 B1)**, **Beards et al. (US 6,417,712 B1)**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

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3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles C. Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow *CC*

October 31, 2006.


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